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## ABSTRACT

In a liquid handling system including a liquid handling substrate having a plurality of channels for conducting a liquid sample in said substrate, where the channels terminate in a plurality of exit ports in an outer surface of the substrate for transfer of a quantity of the liquid sample. The handling system also includes a liquid storage and dispensing substrate having a plurality of separable cartridges corresponding to the channels, with each cartridge terminating at a microelectro mechanical system (MEMS) comprising a laminate of glass, silicon and a piezoelectric substance. The handling system further includes a liquid detecting system comprising a light emitting diode and a photo-detector, where each channel includes a reservoir in communication with a corresponding cartridge creating an interface therebetween. The handling system enables a method for storing and dispensing liquids including drawing a liquid sample into the channels either by capillary action, vacuum, electroosmotic flow, a minipump or any combination thereof, storing the liquid sample into the cartridge, and dispensing the liquid sample.

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